

ribs in front of angle.
By direct violence - apt to be injury
to lungs or to viscera within upper
part of abd. cavity.

Pectus carinatus - deformity of chest
marked by bi-lateral enlargement
of ant. ends of ribs. Softened ribs
may sink in & a groove may
form downward & laterally on
either side of sternum.

Pectus excavatus.

- forward projection of sternum, not
necessarily caused by disease.

Funnel breast - deep depression
at base of xiphoid process. a

Barrel chest - long & narrow
Barrel chest. (emphysema - asthma.)

Scoliosis - 3.

Rib articulations

Art. of ribs with vertebral column
may be divided into 2 sets.

- 1) between heads of ribs - with bodies
of vert. - gliding joint.
- 2) art. of tubercles with transverse
processes.

Costal - vertebral

- plane joints, only small ant. movement.
- up & down mov.
- rotation of rib about its long axis.
- as in vertebral column - ant. &
must shift in each jt.

~~sum total may be considerable~~
~~Sterna~~ - Costal - ~~transverse~~ vertebral.
- plane its - slight gliding movts
Costo - transverse.

- also plane its. small movement.
- up & down movt, rotation of rib about long axis
- as in vert. column - amt. of movt slight in each it - sum total considerable.

Sterna - costal.

- Cost of true ribs join sternum by symphysis its. excepting 1st.
- movt limited to slight gliding.

Inter - chondrial.

- 6, 7, 8, 9, 10 art. with each other.

Movts of thorax.

11 + 12 float.

Inspiration - Thoracic cavity enlarges.
in 3 directions - longitudinal by descent of diaphragm.

Antro - posterior - from thrust caused by elevation of ~~Ant.~~ ^{sternum} of rib.

Transverse - elevation of sides of ~~body~~ ^{chest} of rib.

Thorax

- 1) - protected lungs + great vessels.
- 2) - serves for attachment of muscles.
- 3) - mechanical agent in breathing.
 - superior aperture transmits oesophagus, trachea, blood vessels, nerves.
 - inferior aperture closed for diaphragm.
 - diameter - antero-post. less than transverse.
 - in inspiration thoracic cavity enlarges 3 ways.
 - 1) longitudinal
 - 2) antero-post.
 - 3) transversely.

Diaphragm

Sternum - from back of xiphoid process.
costal - from inner surface of lower 6 ribs

Lumbar - from lumbar - costal arches + lig. the crura of bodies of lumbar vertebrae 1-3.

Lumbar - costal arches

Medial - arch in pair crossing process major, extending from tip of transverse process of 1st lumbar vert. laterally + to the crura medially.

Lateral - arches one quadratus lumborum.
- attached to 12th rib laterally + to tip of transverse process of 1st lumbar vertebra medially.

Crus - rt. & lt.

Right - larger, longer, stronger than left
- att. to ant. surface of bodies
+ inter-vertebral discs of
1-2-3 lumbar vert.

Left - att. to ant. surface of
bodies + inter-vertebral discs
of 1+2 lumbar vert.

Medial margins of crus meet in middle
to form arch of aorta - fibres of rt.
crus exert sphincter action on lower
end of oesophagus. Act of inspiration
which immediately follows swallowing
relaxes these fibres + allows contents
of oesophagus to pass into stomach.

Insertion - from these origins,
muscle fibres insert into a
central tendon - this is
tri-lobed in shape + formed
of strongly inter-woven fibres
lying never front then back
3 openings in diaphragm

1) aortic - at level of 12th
thoracic + to the left.

2) oesophageal - at 10th thoracic

3) inferior vena cava - goes through level
of 8th to 9th thoracic

● Intercostales Interni.

11 on each side.

- 0 - from lower border of 1 rib extending from anterior of ribs behind, from. to near the cost. front.
- 1 - on upper border of rib below
 - direction of fibres is downwards + from.

Intercostales Externi.

- 0 - from inner surface of 1 rib extending from sternum + cost. of rib as far back as angle.
- 1 - upper border of rib below
 - fibres run at rt. \angle to those of interni.

Action of inter-costals need to be considered as of great importance in raising the ribs. These intercostales are taken as contracting simultaneously + maintaining inter-costal spaces.

0 9-9

0 10

0 12

Mechanical breathing.

During inspiration ribs are fixed. - At beginning 3 lower ribs are fixed - muscle fibres contract from crura & arch downward & from - on central tendon of diaphragm. Pericardium of heart is attached to upper part of diaphragm. Some of diaphragm remaining relatively the same - moving down pushing abd. viscera below it. Central tendon becomes fixed point to elevate lower ribs & by this means push from. The sternum & upper ribs, liver provides greatest resistance to diaphragm & stomach.

Right side of thorax moves more than left side. Diaphragm lies highest when the body is horizontal. deepest health breath possible when lying down.

On erect position movement becomes smaller.

If patient lies on side - uppermost half of the diaphragm sinks to a lower level & moves little.

Lowermost half is higher & movement is increased.

- acromial end - small facet for artic. of scapula.

Applied Anatomy

Clavicle often fractured by fall on hand & arm.

Fracture - junction of middle & lateral thirds.

Affected by rickets.

Joints

Fibrous, cartilaginous, synovial.

Sternum - clavicular joint

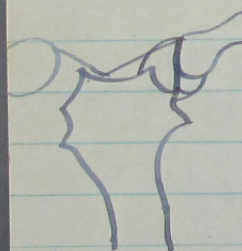
- sternal end of clavicle.

- manubrium of sternum.

- double gliding joint.

- articular disc - articulates.

- touches cartilage of 1st rib.



Ligaments - inter-clavicular lig.

- between 2 clavicles

- manubrium sternum at med. pt.

Costo-clavicular lig.

- cost. of 1st rib

to - costal tuberosity of under surface of clavicle.

Direction of disc

anterior & posterior ligaments - form capsule.

Fixation of disc. above.

- strengthened by inter-clavicular lig. prevents clavicle from riding over edge of sternum.
- deviation of socket is checked by costal-clavicular ligament.

Applied anatomy.

- Dislocation rare.

Acromio-clavicular joint

- gliding joint.
- acromium + clavicle.
(process) (lateral end)

Coraco-clavicular lig.

- trapezoid - ant. + lateral.
- comes from upper surface of coracoid process
- to trapezoid ridge of clavicle.

Conoid lig.

- medial + posterior to thor
- from root of coracoid process to conoid tubercle.
(under side of clavicle)

Movements

- slipping movement. (up + back) clav. on acromium
- rotation - scapula on clavicle.

Security of this joint depends on coraco-clavicular joint.

Applied anatomy.

- dislocation occurs upward,

apt to be recurrent.

Humerus -

- head - less than $\frac{1}{2}$ sphere.
- bicipital groove - biceps tendon.
- q. tuberosity - sparto . SIT.
- supra - spinatus
- infra - "
- teres - minor
- l. tuberosity
- ant - scapularis

Bicipital groove - lateral margin.

- pectoralis major

bottom margin

- latissimus dorsi

medial margin

- teres major.

Shaft - cylindrical . 3 borders + 3 surfaces.

- lower - flat - epicondyles.

Muscle attach - $\frac{1}{2}$ way down - V-shaped

roughness - deltoid (insertion)

Medial surface - coraco-brachialis (insertion)

Anterior " (art) brachialis (origin)

Back - groove for radial nerve.

above groove - lateral head of triceps.

(origin)

below groove - medial head of triceps.

lower extremity -

- lateral supra - condylar ridge

- to upper $\frac{2}{3}$ - brachio - radialis (origin)

lower $\frac{1}{3}$ - int. corpi radialis

longus

Medial epicondyle - common tendon
for flexor muscles of forearm.

- pronator teres.
- flexor carpi radialis
- flexor digitorum profundus
- flexor carpi ulnaris

Artic. surfaces

medial - trochlea. - coronoid fossa above.

lateral - capitulum - radial fossa.

back - olecranon fossa.

Applied Anatomy

Humerus frequently fractured

- shaft below deltoid.

apt injury to radial nerve

- also surgical neck.
- supra-condylar fracture.

Shoulder-joint - gleno-humeral joint.

- ball & socket.

- round head of humerus

glenoid fossa of scapula.

- protected above (limited) by

acromion, coracoid, ~~coraco-acromial lig.~~

Joint capsule - surrounds glenoid fossa.

- on root of coracoid.

- anatomical neck of humerus.

- capsule - thin & lax.

Ligaments - coraco-humeral lig.

- root of glenoid fossa

- to greater tuberosity.

Joint - 5 gleno-humeral bands.



The **Margaret Eaton School Digital Collection** is a not-for-profit resource created in 2014-2015 to assist scholars, researchers, educators, and students to discover the Margaret Eaton School archives housed in the Peter Turkstra Library at Redeemer University College. Copyright of the digital images is the property of Redeemer University College, Ancaster, Canada and the images may not be copied or emailed to multiple sites without the copyright holder's express written permission. However, users may print, download, or email digital images for individual non-commercial use. To learn more about this project or to search the digital collection, go to <http://libguides.redeemer.ca/mes>.